New Radio and Cell Phone Maps

I know you can hear me now!

"Dead zones" made less creepy sounding

One of the most important safety components to any field operation is communication. The accuracy assessment phase of vegetation mapping (see The Whole Ground Truth) involves sampling the far reaches of a park, and the Inventory & Monitoring program (I&M) saw this as an opportunity to bolster park knowledge of radio and cell phone reception across three parks: Hawai'i Volcanoes NP (HAVO), Kalaupapa NHP (KALA), and Haleakalā NP (HALE —map in development).

I&M made hundreds of radio and cell phone checks with dispatch and park staff, and recorded the receptivity (can they hear me?) of each one. These data were classified by reception quality and exported into spatial point data. In addition to the field data, image modeling software was used to create a viewshed analysis of radio repeater and cell towers surrounding the parks. This was done by using the exact locations and heights of radio repeaters and cell phone towers to model where on the ground these towers actually propagated radio and cell waves. These data (plus elevation components) were then correlated with the field data to develop visual maps of receptivity.

Dispatch, emergency responders, and field crews can use this information to better plan for work in areas with known dead zones, allowing them to develop thorough contingency plans and employ alternative communication (e.g. satellite phone) devices as needed.

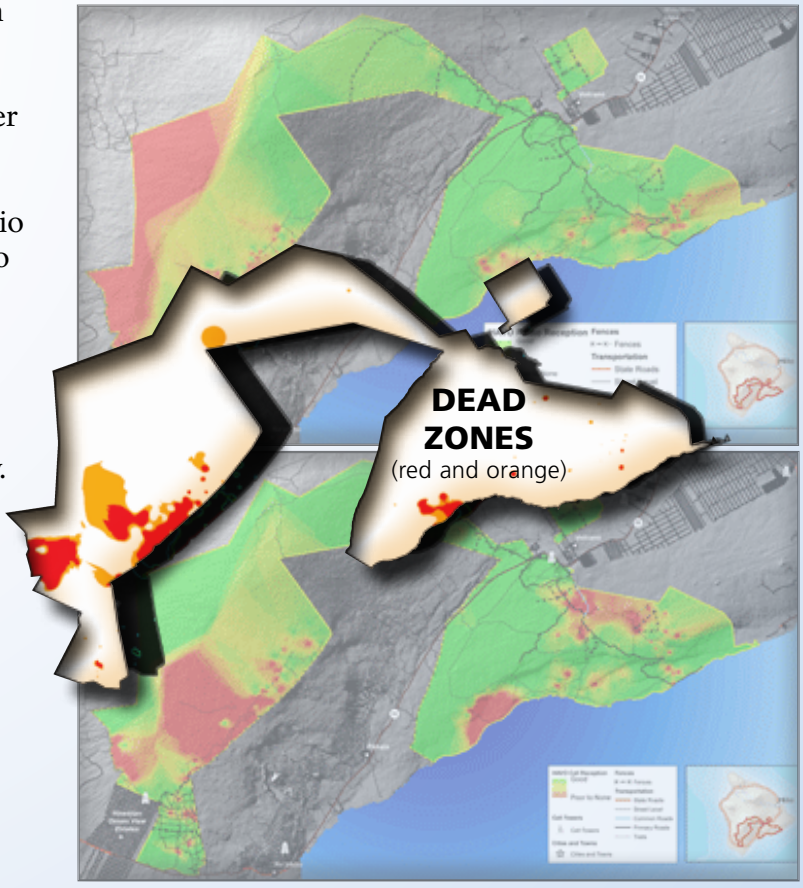
As with any modeled, digitized information, there are likely to be gaps in information and potential discrepancies in exact locations. There were, for example, areas within the parks where no field data was collected. These areas were assumed to have fair reception if the viewshed analysis designated the areas visible to the towers. Also, due to the limitations in GPS receptivity, or in densely vegetated areas which may scatter GPS signals, positional error may be more significant.

Likewise, cell phone towers and radio repeaters may be adversely affected by weather or experience technical interruptions. These maps are intended to provide communication information for all persons in the field, yet we need to be aware that variables in the field may affect receptivity. We encourage all parks to test the maps, take more sample sites and improve these maps by notifying us of discrepancies or additional data. New data can be easily appended into the modeling software to update the maps.

Development of these maps is just another tool to enhance safety through better communications for everyone working in the parks.

–Kathy Akamine & Meagan Selvig,
RCUH Biological Technicians
–Scott Kichman, NPS
GIS Specialist

For a map, please contact
scott_kichman@nps.gov



HAVO RADIO Coverage Map

The red and orange indicate poor receptivity for radio (top) and cell service (bottom).

As you can see, some areas like NW Kahuku (left side of the maps) has strong cell but poor radio receptivity.

The white "dead zones" graphic in the middle highlights areas where neither radio nor cell phones work. An alternative form of communication is recommended while working in these areas.

HAVO CELL Coverage Map